

REMARKS/ARGUMENTS

Claims 1-17 are pending. By this Amendment, claims 1 and 9 are amended and new claim 17 is added. Reconsideration in view of the above amendments and the following remarks is respectfully requested.

The drawings were objected to under 1.83(a) as failing to show “the internal fluid delivering provided in the tool”. Applicants respectfully request clarification as to which claim recites this element and the precise element which is alleged to be missing from the drawings.

If the Examiner is referring to claim 8, the internal duct is shown in Figure 1 of the drawing as element 11, which is in communication with a duct 12 which is connected to a pump.

Reconsideration and withdrawal of the objection are respectfully requested.

Claims 1-16 were rejected under 35 U.S.C. §112, second paragraph. This rejection is respectfully traversed since recitation of the phrase “airless type” does not render the claim indefinite, especially given the definition of “airless” provided in the specification, e.g., see page 9, lines 20-25.

In order to fully obviate the Examiner’s concern, claims 1 and 9 have been amended such that they refer to one or more airless nozzles, rather than airless type nozzles.

Reconsideration and withdrawal of the rejection are respectfully requested.

Claims 1, 2, 4-10 and 12-16 were rejected under 35 U.S.C. §102(b) over McConkey (U.S. Patent No. 5,494,134). This rejection is respectfully traversed.

Claims 1 is directed to a device for delivering a lubricating and/or cooling fluid near the contact area between a tool and a workpiece being machined, comprising at least a circuit for circulation of said fluid and delivering means to deliver said fluid near, or in correspondence of,

the contact area between said tool and said workpiece, characterized in that said delivering means include one or more airless nozzles to atomize said fluid.

McConkey does not teach or suggest this subject matter. McConkey teaches to use high pressure and velocity in order to force coolant fluid into locations not reached by low pressure flooding systems in order to improve metal chip removal from the cutting location (column 2, lines 1-7). In accordance with this teaching, Figure 5 of McConkey seems to show a “jet” of fluid instead of a spray pattern of atomized fluid and nothing is said about the possible fragmentation of this jet into small droplets and the advantages given by atomization in terms of enhanced heat removal. Even if McConkey talks about spray nozzles, this document is silent as to the type of nozzles in the coolant system and in particular, does not teach the use of airless spray nozzles to atomize the cooling/lubricating fluid.

Thus, McConkey does not teach or suggest one or more airless nozzles to atomize the fluid as set forth in claim 1, or that the delivering of the fluid is carried out by its atomization through one or more airless nozzles per claim 9.

Reconsideration and withdrawal of the rejection are respectfully requested.

Claims 3 and 11 were rejected under 35 U.S.C. §103(a) over McConkey and further in view of Raghavan et al. (U.S. Patent No. 5,417,607). This rejection is respectfully traversed at least because claims 3 and 11 depend from claim 1 and 9, respectively, and are patentable by virtue of that dependency. In addition, Raghavan et al. teaches only a method and a nozzle to generate a fan jet having cleaning and/or cutting purposes. Therefore, Raghavan et al. too is silent about the use of airless nozzles to atomize a cooling/lubricating fluid, as set forth in claims 1 and 9.

Moreover, Applicants respectfully submit that Raghavan et al. is directed toward non-analogous art and in any event there is no motivation to combine Raghavan et al. with McConkey, as Raghavan et al. belongs to surface cutting/cleaning which is a different field of endeavor compared to McConkey and the claimed invention.

In general, both of these documents fail to recognize improvements resulting from the claimed invention. For example, atomization of the fluid with airless nozzles allows enhanced cooling effect which can be easily controlled by acting on the pressure of the fluid and/or the diameter of the nozzles in order to determine the size of the droplets.

In particular, it is unlikely that an atomized spray as set forth in claims 3 and 11, i.e., a flow of very small particles of fluid, would be the same and have the same effect as a spray as taught in McConkey, i.e., a spray suitable to remove metal chips from the working location. The same applies to the “fan jet” of Raghavan et al. which can also be used for making straight cuts in a hard material (see column 5, lines 14-20).

Reconsideration and withdrawal of the rejection are respectfully requested.

In view of the above amendments and remarks, Applicants respectfully submit that all the claims are patentable and that the entire application is in condition for allowance.

The Commissioner is hereby authorized to charge any deficiency, or credit any overpayment, in the fee(s) filed, or asserted to be filed, or which should have been filed herewith (or with any paper hereafter filed in this application by this firm) to our Account No. 14-1140 under Order No. PTB-3687-131.

PIANA ET AL.
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Should the Examiner believe that anything further is desirable to place the application in better condition for allowance, he is invited to contact the undersigned at the telephone number listed below.

Respectfully submitted,

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